Consommation et Corporations Canada
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Consumer and Corporate Affairs Canada
Patent Office

(21) (A1) 2,037,273
(22) 1991/02/25
(43) 1992/08/26
(52) 18-121

5,005,6/58

(51) INTL.CL.^{5} A63B-059/14; B29D-023/00; B29D-031/00

(19) (CA) APPLICATION FOR CANADIAN PATENT (12)

(54) Method of Manufacturing an Ice Hockey Stick

(72) Yeh, Chien-Hwa - China ;

(73) Same as inventor

(57) 5 Claims

Notice: The specification contained herein as filed

ABSTRACT

This invention relates to a method of manufacturing an ice hockey stick including steps of immersing a first piece of composite fiber material in resin, forming the first composite fiber material into an elongated tubular member, immersing a second piece of composite fiber material in resin, forming the second composite fiber material into a fiber sleeve with same length as the elongated tubular member, putting the fiber sleeve on a blade core to form a blade portion, disposing a plurality of fiber boards on the core, withdrawing the core, inserting a nylon tube into the fiber sleeve, sealing the nylon tube at an end extending out of the blade, sealing an end of the blade, inserting the elongated tubular member into an upper end of the fiber sleeve, enclosing the elongated tubular member and the fiber sleeve with a second fiber sleeve to form a stick embryo, disposing the stick embryo into a mould and applying pressure and heat to the mould to harden the stick embryo.

TITLE: METHOD OF MANUFACTURING AN ICE HOCKEY STICK

This invention relates to a method of manufacturing an ice hockey stick and in particular one designed to use composite fiber material to fabricate an ice hockey stick.

Ice hockey is a game played by two teams of six players each. The players are equipped with skates and wooden sticks. The object of each team is to score points by propelling a disk (puck) of vulcanized rubber into the opponent's goal while preventing the opponents from driving the puck into the goal the team is defending at the opposite end of the playing area.

However, all kinds of stick are made of wood and generally composed of two portions, i.e. a shaft 1 and a blade 2 as shown in FIG. 18. The shaft 1 is made of a number of wooden board 11 with longitudinal grains stuck together while the blade 2 made of a number of wooden board 21 with latitudinal grains stuck together. Then the former is engaged with latter by means of resin. However, such stick is made by hand and easy to be broken.

Therefore, it is an object of the present invention to provide a method of manufacturing an ice hockey stick which may obviate and mitigate the above-mentioned drawbacks.

It is the primary object of the present invention to provide a method of manufacturing an ice hockey stick which may produce an ice hockey with high strength.

It is another object of the present invention to provide a method of manufacturing an ice hockey stick which is fit for mass production.

It is still another object of the present invention to provide a method of manufacturing an ice hockey stick which is light in weight.

It is still another object of the present invention to provide a method of manufacturing an ice hockey stick which is simple in construction.

It is a further object of the present invention to provide a method of manufacturing an ice hockey stick which is economic to produce.

Other objects and merits and a fuller understanding of the present invention will be obtained by those having ordinary skill in the art when the following detailed description of the preferred embodiment is read in conjunction with the accompanying drawings.

FIG. 1 is a perspective view of an ice hockey stick according to the present invention;

FIG. 2 shows the way to form the elongated tubular member;

FIG. 3 shows the way to dispose the fiber boards on the cores;

FIG. 4 is a plan view of the first fiber board;

FIG. 5 is a plan view of the second fiber board;

FIG. 6 is a plan view of the third fiber board;

FIG. 7 is a plan view of the fourth fiber board;

FIG. 8 shows the step of inserting a nylon tube into the fiber sleeve;

FIG. 9 shows the step of sealing the lower end of the fiber sleeve;

FIG. 10 shows the step of engaging the elongated tubular member with the fiber sleeve;

FIG. 11 shows the step of enclosing a second fiber sleeve of the fiber sleeve;

FIG. 12 shows the flow chart of the present invention;

FIG. 13 is a first working view of the present invention;

FIG. 14 is a second working view of the present invention;

FIG. 15 is a third working view of the present invention;

FIG. 16 is a fourth working view of the present invention;

FIG. 17 shows another preferred embodiment of the present invention; and

FIG. 10 shows the construction of a prior art ice hockey stick.

With reference to the drawings and in particular to FIG. 1 thereof, the ice hockey stick according to the present invention mainly comprises a shaft 1 and a blade 2 which may be formed integrally or separately.

FIG. 12 shows the flow chart for manufacturing an ice hockey stick according to the present invention. As illustrated, the glass fiber, carbon fiber or the mixture thereof is first weaved into a fibre cloth and a fiber sleeve and immersed in resin. This technique is well known in the art and has no need to be described here in detail. Then, the fiber cloth is wrapped or otherwise formed into an elongated tubular member 10 as shown in FIG. 2. Further, a set of cores 31, 32 and 33 are immersed in resin and then enclosed by a fiber sleeve 47. The fiber sleeve 47 has a length equal to that of the elongated tubular member 10. Thereafter, four fiber boards 41, 42, 43, and 44 made of several layers of fiber cloth are disposed on the cores 31, 32 and 33 in order. As may be seen in FIG. 4, the first fiber plate 41 is provided at an intermediate position of the right side with a notch 411 while the second fiber plate 44 formed at the intermediate position of the lower side with a notch 441 so that the notch 411 of the first fiber plate 41 and the notch 441 of the second fiber plate 44 will adapt to the neck portion 331 of the core 33 without being wrinkled. Then, the cores 31, 32 and 33 are withdrawn in order from the left with reference to FIG. 3.

As illustrated in FIG. 8, a nylon tube 5 with a length longer than the fiber sleeve 47 is passed into the fiber sleeve 47 from the left and then sealed at its left end. Then, the left end of the fiber sleeve 47 is enclosed by a fiber panel 45 (see FIG. 9) and the elongated tubular member 10 is engaged with the upper end 21 of the blade 20 formed by the cores 31, 32 and 33 (see FIG. 10) and then enclosed by another elongated fiber sleeve 47 to form a stick embryo.

Then, the stick embryo is disposed into a mould and applied with pressure and heat thereby hardening the stick embryo and therefore providing an integral tubular ice hockey stick.

In addition, the shaft 1 and the blade 2 may be formed separately and then joined together in the ways as shown in FIGS. 13 and 14.

Further, in order to increase the rigidity of the blade 2, a metal plate 46 is disposed at each side of the blade 2 after the blade 2 is enclosed with the fiber boards 41, 42, 43 and 44 (see FIG. 15). The simpler way to strengthen the blade is further enclosing a piece of fiber cloth 48 or the like on the surface of the fiber sleeve 47.

As shown in FIG. 17, a plurality of grooves 23 are formed on the side surface of the blade 2 so as to increase the stability of the stick when in hitting or receiving a puck.

Although the present invention has been described with a certain degree of particularity, it is understood that the present disclosure is made by way of example only and that numerous changes in the detail of construction and the combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as hereinafter claimed.

CLAIMS:

1. A method of manufacturing an ice hockey stick comprising steps of:

immersing a first piece of composite fiber material in resin;

forming said first composite fiber material into an elongated tubular member;

immersing a second piece of composite fiber material in resin;

forming said second composite fiber material into a fiber sleeve with same length as said elongated tubular member;

putting said fiber sleeve on a blade core to form a blade portion;

disposing a plurality of fiber boards on said core;

withdrawing said core;

inserting a nylon tube into said fiber sleeve;

sealing said nylon tube at an end extending out of said blade;

sealing an end of said blade;

inserting said elongated tubular member into an upper end of said fiber sleeve;

enclosing said elongated tubular member and said fiber sleeve with a second fiber sleeve to form a stick embryo;

disposing said stick embryo into a mould; and

applying pressure and heat to said mould to harden said stick embryo.

2. The method of manufacturing an ice hockey stick as claimed in Claim 1, further comprising a step of disposing a metal plate on said fiber boards after said fiber boards are arranged on said cores.

3. The method of manufacturing an ice hockey stick as claimed in Claim 1, further comprising a step of enclosing a fiber board on the blade portion of said first fiber sleeve.

4. The method of manufacturing an ice hockey stick as claimed in Claim 1, wherein further comprising a step of forming a plurality of grooves on the blade portion of said first fiber sleeve.

5. The method of manufacturing an ice hockey stick as claimed in Claim 1, wherein said core is composed of three parts.

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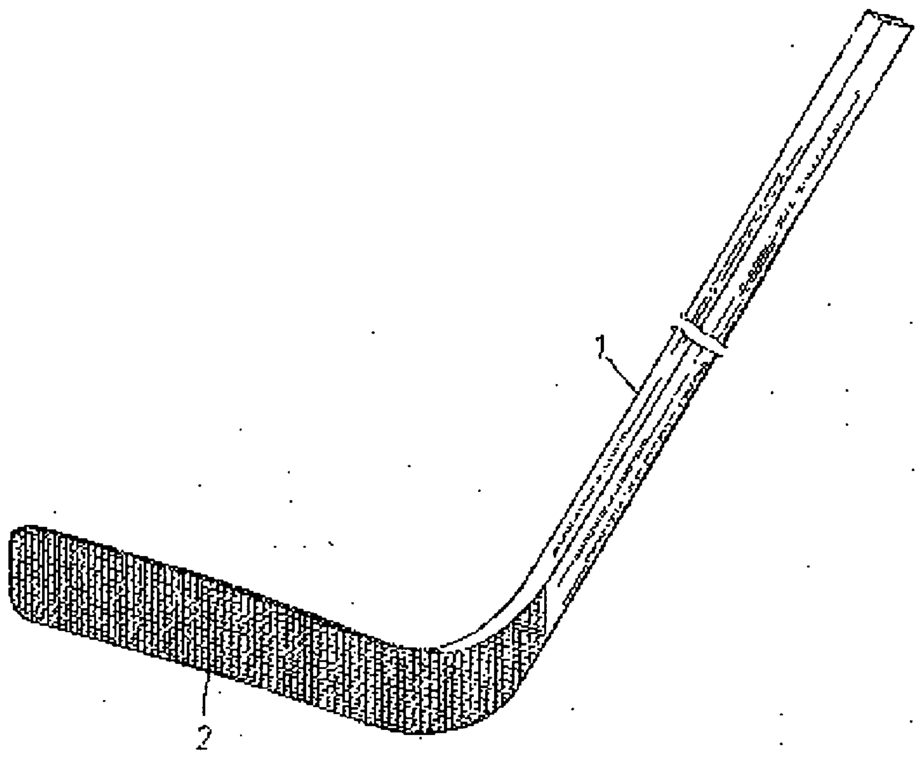

FIG. 1

CHIEN-HWA YEH
BY: Aded Company

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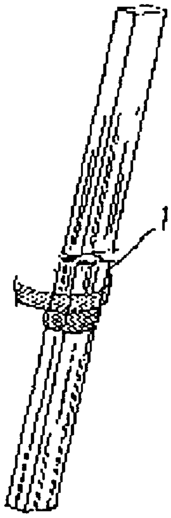

FIG. 2

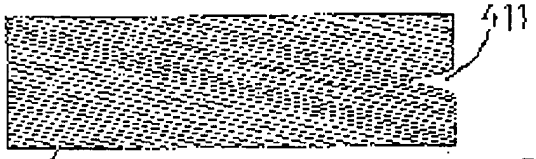

FIG. 4

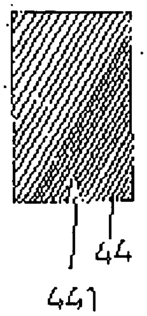

FIG. 6

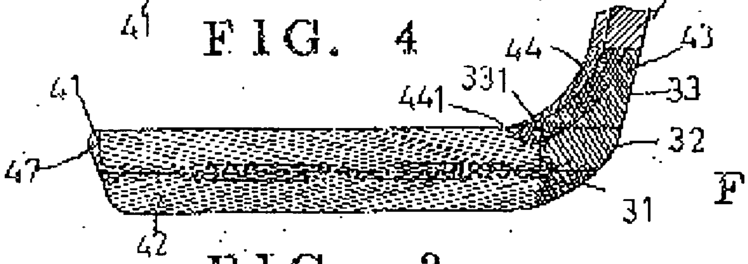

FIG. 3

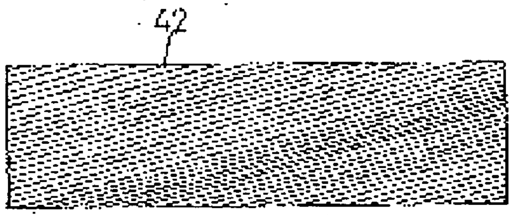

FIG. 5

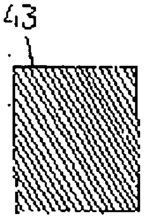

FIG. 7

CHIEN-HUA YEH
BY: Ade & Company

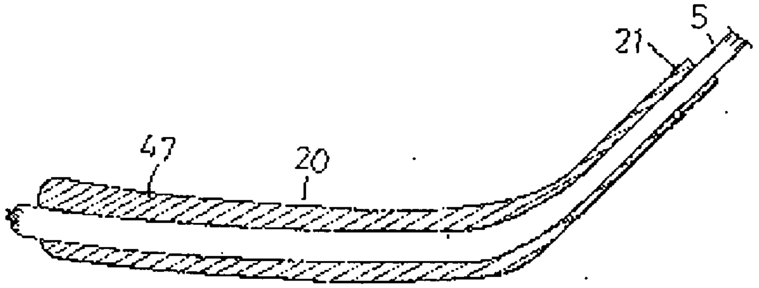

FIG. 8

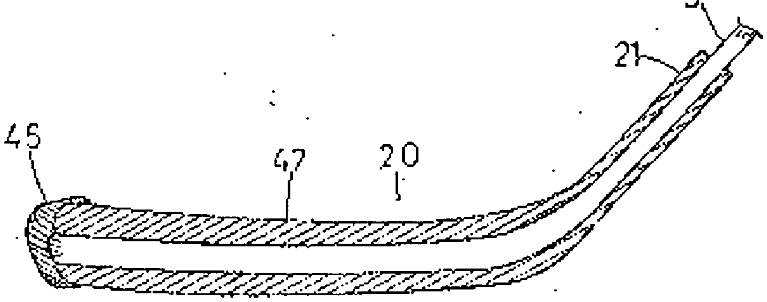

FIG. 9

CHARN-HWA YEH
BY: Aoki & Company

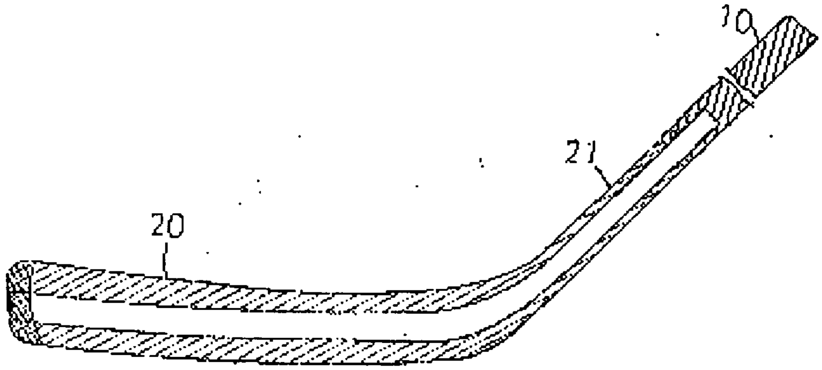

FIG. 10

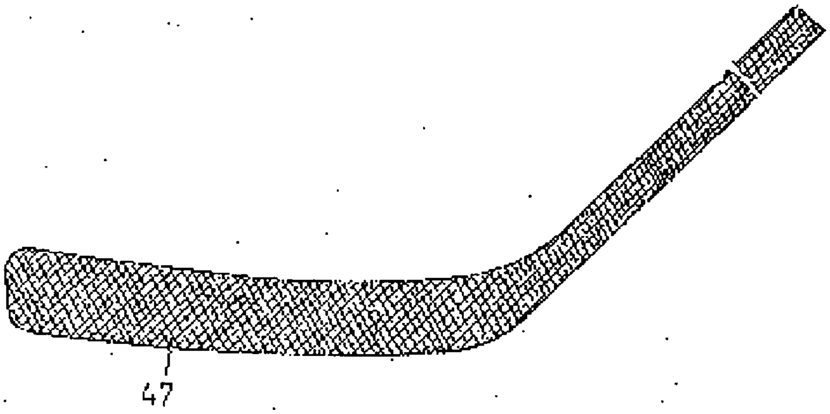

FIG. 11

CHIEN-HWA YEH
BY: Adair & Company

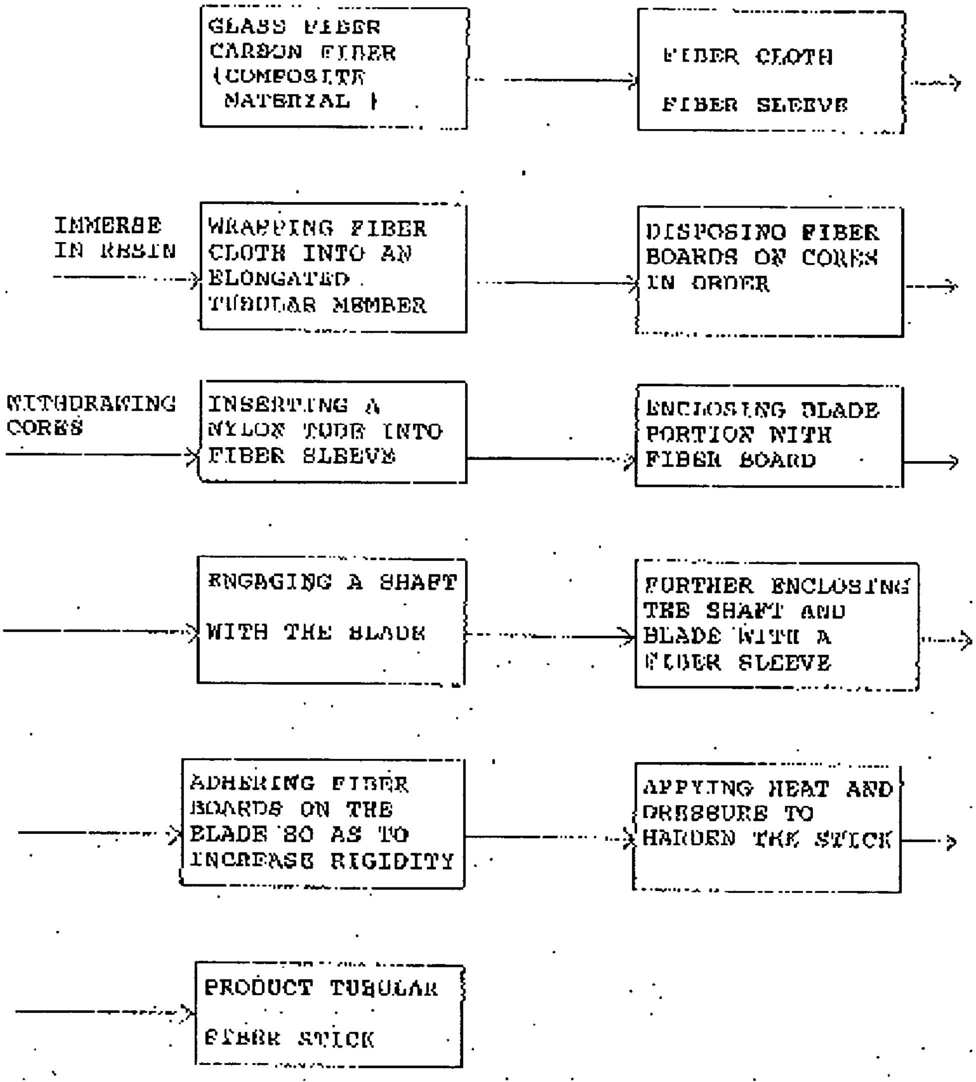

FIG. 12

CHIEN-HWA YEH
BY:
Adiel Company

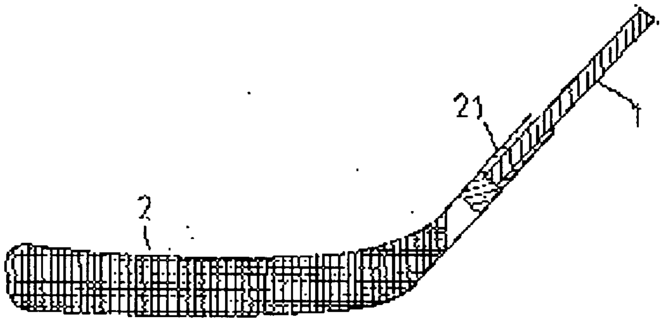

FIG. 13

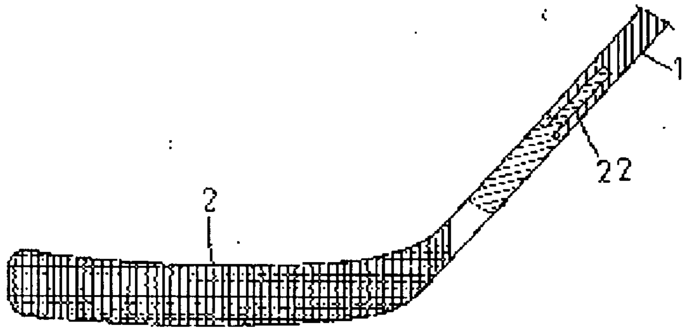

FIG. 14

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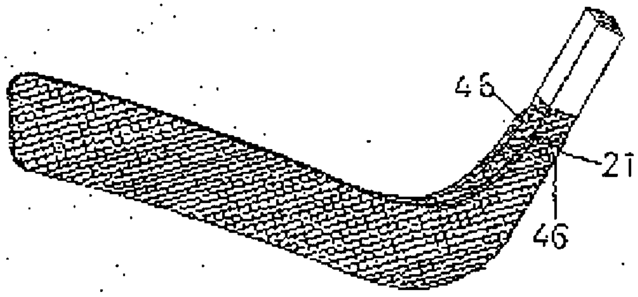

FIG. 15

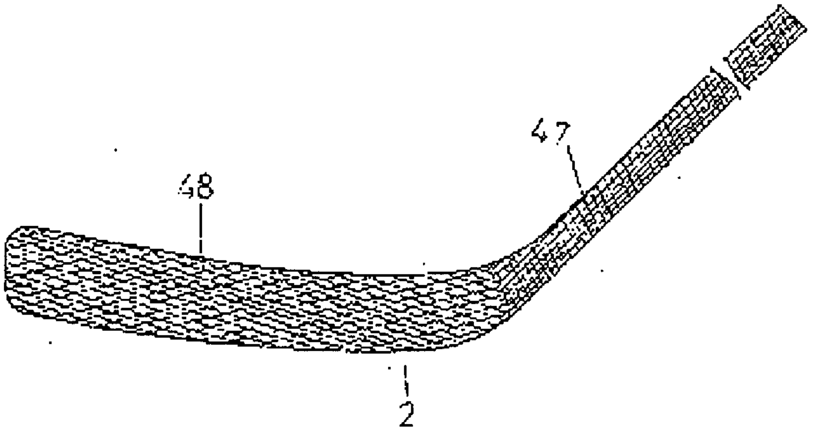

FIG. 16

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BY: Osled Company

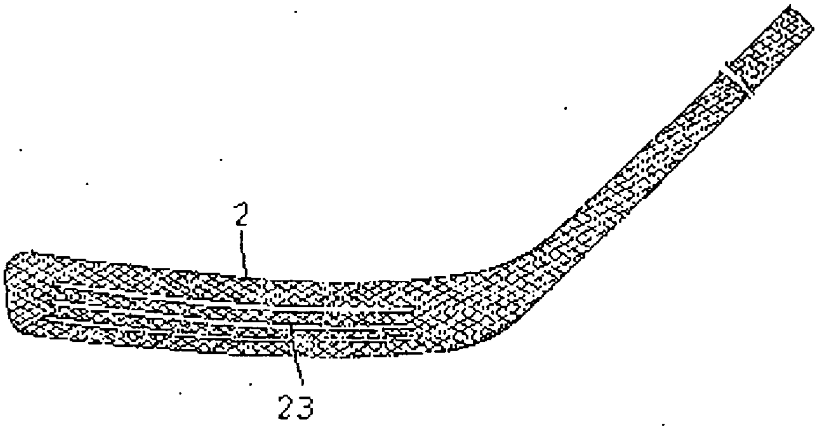

FIG. 17

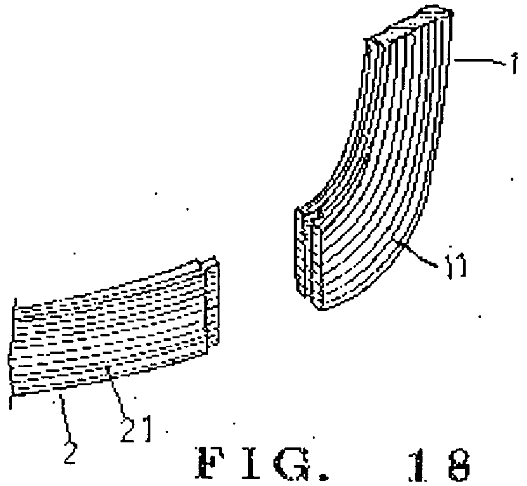

FIG. 18

CHIEN-HWA YEH
BY: Ade & Company